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THE MICROSCOPE IN BOTANY.¹—This edition and translation differs in many important respects from the original, having been especially adapted by the American editors to the wants of botanical students in this country. The changes are most numerous in chapter I, which is devoted to a discussion of the microscope. Here the student will find much valuable and interesting matter. We cannot refrain from quoting, for the benefit of our makers of microscopes as well as the younger botanists, the remark of Hugo Von Mohl: "The simpler the construction of the microscope is, the more easily and more quickly will one accomplish all the necessary movements. The more complicated the construction the more will they cost in time and reflection, and the more will the attention be distracted thereby during the observation. Whoever has not the manual dexterity to work with a simply constructed microscope, and finds it necessary to use a screw instead of his fingers for every movement, is on that account disqualified for a microscopical observer, for he will labor in vain to prepare a usable specimen" (p. 8).

The second chapter is devoted to accessories, and the third to the preparation of microscopic objects, both of which pertain to microscopy in general fully as much as to micro-botany.

Chapter IV is devoted to the reagents to be used in the botanical laboratory. The treatment here is satisfactory, and reminds one much of Poulson's Botanical Micro-Chemistry.

In chapter V we find the book proper, to which all the preceding chapters have been accessory and preparatory. Here are taken up the various substances to be found in the plant, *e. g.*, cellulose, including wood and cork, starch, dextrine, mucilage, gum, inulin, sugar, albuminous matter, chlorophyll, the coloring matter of flowers, etc., etc. In all this portion of the book the treatment is such that the student cannot fail to obtain many useful suggestions and hints in his work.—*Charles E. Bessey.*

THE AMATEUR NATURALIST, Germanton, Phila.; THE HOOSIER MINERALOGIST AND ARCHÆOLOGIST, Indianapolis; THE MUSEUM, Philada.; THE YOUNG MINERALOGIST AND ANTIQUARIAN, Wheaton, Illinois.—These periodicals are intended for the instruction and pleasure of the younger naturalists, and we welcome them as a useful agent in developing the taste for science which is so frequently seen among boys. Such publications serve to keep alive an interest which is often more or less extinguished with advancing years and responsibilities, but which is of much value to the possessor. A more general adoption of the scientific or positive method in thought and action is one of the anticipations of those

¹ *The Microscope in Botany.* A guide for the microscopical investigation of vegetable substance. From the German of Dr. Julius Wilhelm Behrens. Translated and edited by Rev. A. B. HERVEY, A.M., assisted by R. H. WARD, M.D., F.R.M.S. Illustrated with 13 plates and 153 cuts. Boston, S. E. Cassino & Company. 1885, pp. xvi, 466. \$5.

that believe in progress; and these scientific journals for the young are one of the agencies by which this state of things is to be brought about.

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GENERAL NOTES.

GEOGRAPHY AND TRAVELS.¹

AFRICA.—*The Sahara*.—Dr. Oscar Lenz has published his work on “Timbuktu” and is preparing to set out on a new expedition. His exploration of 1879–80 comprised (1) Morocco and the Atlas ranges as far as the Draa basin, and (2) the Western Sahara. Dr. Lenz traveled with only two interpreters and a trusty Moroccan attendant, yet thanks to a letter of recommendation from the Sultan of Morocco, and his assumption of the character of a Mussulman physician, he passed safely through the fanatical tribes on the route. The stony and sandy tracts of the Western Sahara are produced by the weathering of sandstone, quartz and carboniferous limestones, and have a mean elevation of from 800 to 1000 feet. Dried-up watercourses, with deep eroded channels, radiate from the central highlands north and north-east to the Mediterranean, east to the Nile, south to the Tsad and Niger, and west to the Atlantic. The conclusion seems to be that up to comparatively recent times the Sahara was a well-watered and wooded region, mostly inhabited by pastoral and agricultural communities, the descendants of more primitive peoples who were contemporary with Palæolithic and Neolithic man elsewhere. In the Taudeni district, about 20° N., under the meridian of Timbuktu, Dr. Lenz found some well-worked greenstone implements. Gerhard Rohlfs has found similar objects as far east as the Kufara oasis south of Tripoli. The Asiatic camel is a comparatively recent intruder. The crocodile still survives in many of the pools and lakelets which here and there mark the course of mighty streams. Dr. Lenz believes the desiccation to have taken place during the historic period, and attributes it largely to the reckless destruction of the woodlands. As vegetation disappeared so did moisture, the large fauna became extinct, and the settled populations were succeeded by nomad Berbers and Semites. The fortifications of Timbuktu were razed upon its capture by the Fulahs in 1826, and since then it has been a purely commercial town, but a constant bone of contention between the Tuariks and the Fulahs, which levy dues but leave the administration in the hands of the Kahia. Dr. Lenz affiliates the Fulahs to the Nubas, but A. H. Keane, in his review of the work, in *Nature*, considers this an error. The Fulahs are distinctly non-Negro, and Dr. Lenz notices the resemblance to Europeans of full-blood specimens.

M. Giraud's Expedition.—M. V. Giraud, in his account of two years among the Central African lakes, delivered before the Geo-

¹ This department is edited by W. N. LOCKINGTON, Philadelphia.